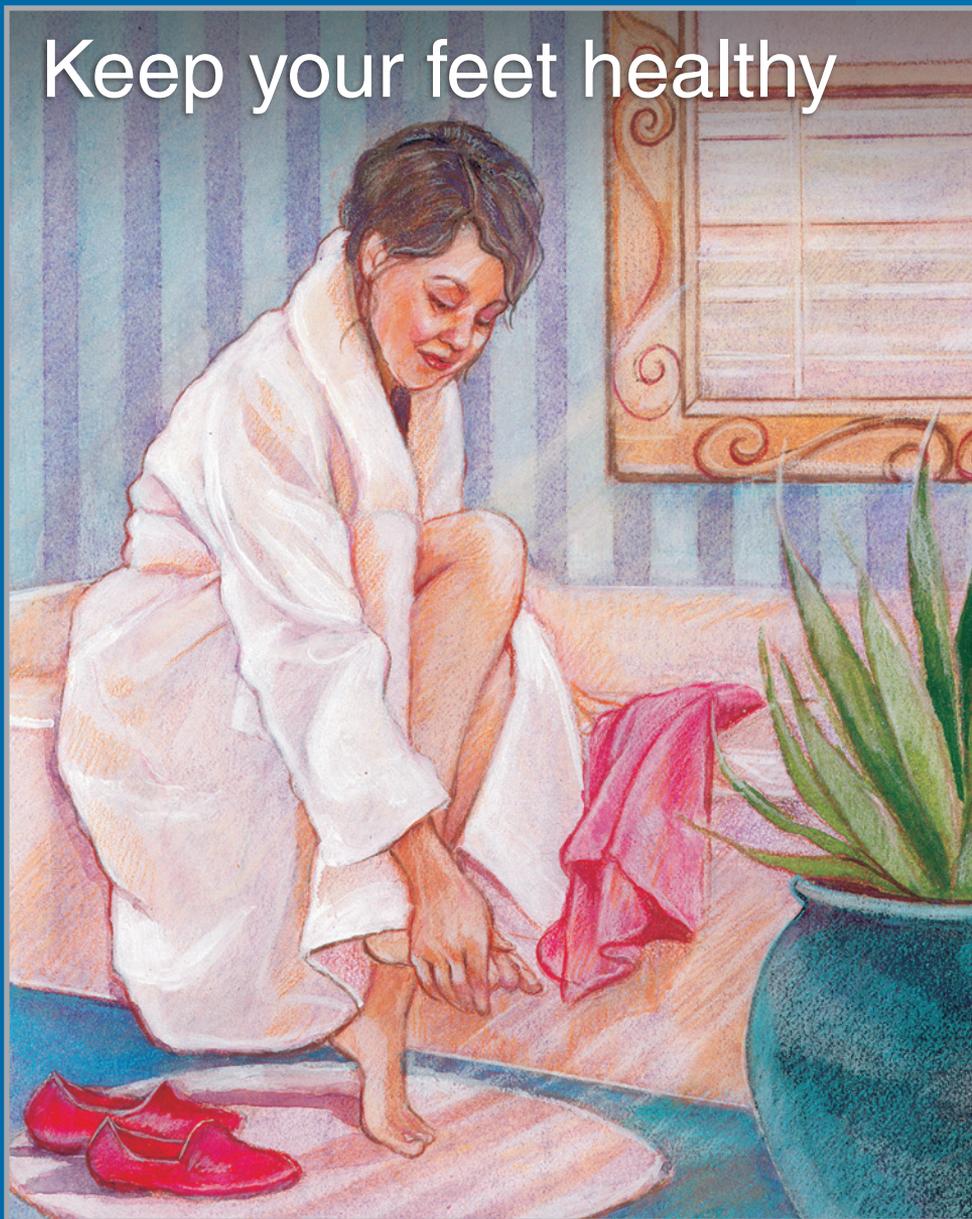


Prevent diabetes problems

Keep your feet healthy



National Institute of
Diabetes and Digestive
and Kidney Diseases

National Diabetes Information
Clearinghouse

Prevent diabetes problems:
Keep your feet healthy

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How can diabetes affect my feet?

Too much **glucose**,* also called sugar, in your blood from diabetes can cause nerve damage and poor blood flow, which can lead to serious foot problems.

Nerve Damage

Damaged nerves may stop sending signals, or they may send signals too slowly or at the wrong times. Nerve damage can cause you to lose feeling in your feet. You may not feel pain, heat, or cold in your legs and feet. You may not feel a pebble inside your sock that is causing a sore. You may not feel a blister caused by poorly fitting shoes.

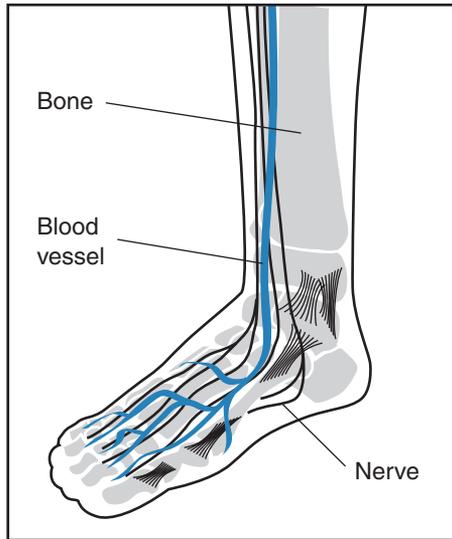
Sores on your feet can become infected. If your blood glucose is high, the extra glucose feeds the infection in those sores and the infection gets worse. Nerve damage can also cause pain and lead to foot **deformities**, or changes in the muscles, bones, and shape of your feet.

*See the Pronunciation Guide for tips on how to say the words in **bold** type.

Poor Blood Flow

Poor blood flow means not enough blood flows to your legs and feet through your blood vessels. Poor blood flow makes it hard for a sore or an infection to heal. This problem is called **peripheral artery disease**, also called PAD.

Sometimes, a bad infection never heals. The infection might cause **gangrene**. If you have gangrene, the skin and tissue around the sore die. The area becomes black and smelly.



Too much glucose, also called sugar, in your blood from diabetes can cause nerve damage and poor blood flow, which can lead to serious foot problems.

Prompt attention to any sore or infection on your toe or foot can prevent gangrene. Your doctor may decide to cut away the infected tissue or give you antibiotics. Your doctor also may perform tests to see how well blood is reaching your legs and feet. Sometimes, your doctor may be able to clear blocked blood vessels to improve the blood flow.

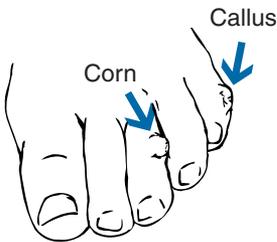
If these treatments don't work, or if you have severe pain or infection, a doctor may have to perform an **amputation**—surgery to cut off a body part—of your toe, foot, or part of your leg. A surgeon performs this operation in a hospital. You will receive **anesthesia** and be asleep during the operation.

What common foot problems can lead to pain or infections?

If you have diabetes, the common foot problems below can lead to pain or infections that make it hard to walk. If you have any of these problems, make sure you get prompt treatment from your doctor.

Corn and callus

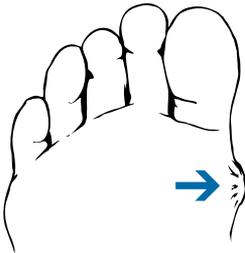
Corns and calluses are thick layers of skin.



- Corns and calluses are caused by too much rubbing or pressure on the same spot. They often form where the first and second toes overlap.
- You can gently rub a **pumice** stone on a corn or callus after you take a bath or shower to wear it down. A pumice stone is a type of rock used to smooth the skin. However, check with your doctor about the best way to care for a corn or callus.
- If an infection occurs in an area of a corn or callus, your doctor may need to remove the unhealthy tissue and give you antibiotics.

Blister

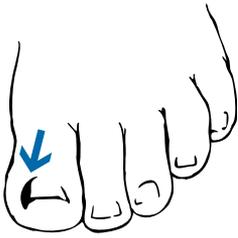
Blisters are areas of skin that are raised and filled with fluid.



- A blister can form if your shoe always rubs the same spot on your foot.
- Wearing shoes that do not fit or wearing shoes without socks also can cause blisters.
- To prevent a blister, use socks or a bandage over the spot being rubbed. Wear shoes that fit properly.
- Cover small blisters with a bandage, and cover large ones with a gauze pad held with adhesive or paper tape. You also can buy special blister bandages in different sizes at a drugstore.
- If your blister is infected, your doctor may need to drain the fluid from the blister and give you antibiotics.

Ingrown toenail

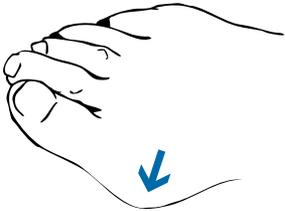
Ingrown toenails happen when the edges of your toenails grow into your skin.



- Ingrown toenails can form if you wear shoes that are too tight or cut into the corners of your toenails when you trim them.
- To prevent ingrown toenails, wear shoes that fit properly.
- If your toenail edges are sharp, smooth them with a nail file or emery board instead of cutting them.
- If you go to a salon for a pedicure, make sure they do not cut into the corners of your toenails. Never treat ingrown toenails at home. Your doctor may remove part of your toenail to help it heal or keep it from growing back into your skin. If your toe is infected, you may need antibiotics.

Bunion

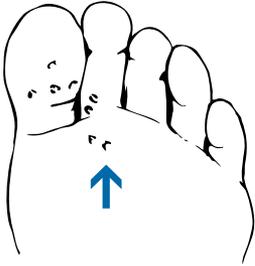
A bunion is a bump at the outside edge of your big toe. As the bump gets worse, it can be filled with extra bone and fluid.



- Bunions form when your big toe slants toward your small toes. High heels, pointed shoes, or shoes that are too tight or narrow may cause bunions. Bunions often run in families.
- To prevent bunions, wear shoes that fit well.
- Your doctor may suggest using padded shoe inserts to prevent a bunion from getting worse and using medicine to reduce pain and swelling. You may need surgery to remove a bunion that causes frequent pain.

Plantar warts

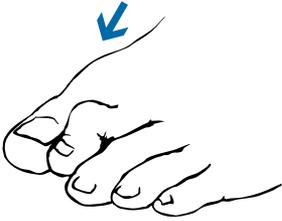
Plantar warts are small, flesh-colored growths on the bottoms of your feet. Sometimes you see tiny, black dots in the warts.



- Plantar warts are caused by a virus that enters your feet through small breaks in your skin. The warts can be painful and make it hard to walk.
- To prevent plantar warts from spreading, avoid contact with your warts and wash your hands after touching them.
- Keep your feet clean and dry.
- Don't go barefoot in public areas.
- Your doctor may remove plantar warts with minor surgery, laser treatment, liquid **nitrogen**, or medicines.

Hammertoe

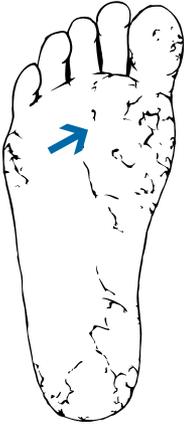
Hammertoes are toes that curl under your feet.



- Hammertoes form when one or both joints of the small toes bend from weakness in your foot muscle. Diabetic nerve damage may cause the weakness.
- You may get sores on the bottoms of your feet and on the tops of your toes that can become infected.
- The shape of your feet may change.
- You can have problems walking and finding shoes that fit well.
- Avoid high heels or shoes with pointed toes.
- Your doctor may give you an **orthotic**, or insert, to place in your shoe. Medicines can reduce pain and swelling. If your hammertoe becomes rigid and painful, or if an open sore has formed, you may need surgery to correct your toe.

Dry and cracked skin

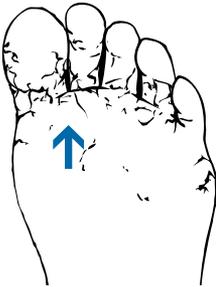
Dry and cracked skin is rough, scaly, and flaking. Your skin may be gray if you have dark skin. Your skin may be red or itch.



- Dry and cracked skin can be caused by high blood glucose, nerve damage, or poor blood flow.
- Cracks allow infection to start.
- Keep your feet moist with lotion or petroleum jelly.
- Do not soak your feet because your skin could become drier.
- If you cannot treat your dry and cracked skin at home, see your doctor. You may need a prescription ointment or cream.

Athlete's foot

Athlete's foot is a fungus that causes itching, burning, redness, and cracking of your skin. The fungus grows on the soles of your feet and in between your toes.



- To prevent athlete's foot, keep your feet as dry as you can.
- Try not to wear the same shoes all the time. Try to wear socks that do not trap moisture, such as cotton or wool socks.
- Wear waterproof shoes or flip-flops in public showers.
- If you go to a salon for a pedicure, ensure the tools are sterilized or bring your own tools.
- See your doctor to make sure you have athlete's foot. You can buy sprays and creams to treat fungus at a drugstore; however, your doctor may prescribe a stronger oral medicine.

Fungal infection

Fungal infection of the toenails makes them thick, hard to cut, and appear yellow, green, brown, or black. A nail may also fall off.



- To prevent a fungal infection of the toenails, keep your feet as dry as you can.
- Try not to wear the same shoes all the time. Try to wear socks that do not trap moisture, such as cotton or wool socks.
- Wear waterproof shoes or flip-flops in public showers.
- If you go to a salon for a pedicure, ensure the tools are sterilized or bring your own tools.
- See your doctor to make sure you have a fungal infection of the toenails. Your doctor may prescribe an oral medicine to treat them. Sometimes, a doctor may remove the nail surgically or chemically or perform laser treatment. A laser beam can go deep into the nail tissue and kill the fungus; however, doctors are still studying how well this treatment works.

Signs of infection on your feet include

- pus
- redness
- increasing pain
- warm skin

Call or see your doctor right away if you have any of these signs.

How can diabetes change the shape of my feet?

Nerve damage from diabetes can lead to changes in the shape of your feet. The damaged nerves cannot send messages to your foot muscles about movement. Your foot muscles become weak and imbalanced. The bones of your feet and toes may shift.

Nerve damage from diabetes also causes **Charcot's** foot, a problem in which the joints and soft tissue in your foot are destroyed.

In the early stages of Charcot's foot, your joints are stiff and collect fluid. The problem can quickly worsen. Your bones can slip out of place, making your foot look deformed.

You might not sense pain, so you may keep walking on your foot, making the problem worse. Without knowing it, you could injure and damage the joints or break a bone in your foot.

The symptoms of Charcot's foot appear quickly and include

- warm, red skin
- swelling
- pain

Your doctor may first treat Charcot's foot by placing your foot in a cast and asking you to walk only with crutches or use a wheelchair. You may need surgery to correct the placement of the bones.



Charcot's foot

How can special shoes or shoe inserts help my feet?

Special shoes or shoe inserts can be made to fit softly around and protect sore feet or feet that have changed shape. Medicare Part B insurance and other health insurance programs may help pay for these shoes or inserts. Ask your doctor whether your special shoes or inserts are covered by your insurance.

How often should I have a foot exam?

See your doctor at least once a year for a foot exam, or more often if you have foot problems.

During the exam, your doctor will

- look at your feet for signs of problems, especially if you have nerve damage
- test the sense of feeling in your feet
- test how well blood is flowing to your legs and feet

- show you how to care for your feet
- decide if special shoes or shoe inserts would help your feet stay healthy
- trim your toenails if you cannot trim your own

Help your doctor care for your feet during every checkup. Start every checkup by taking off your shoes and socks. Tell your doctor about any foot problems you are having. If needed, your doctor may send you to a foot doctor, called a **podiatrist**.



Start every checkup by taking off your shoes and socks.

How does smoking affect my feet?

Smoking can narrow and harden the blood vessels that nourish your nerves with oxygen and nutrients. Nerve damage and poor blood flow can cause serious foot problems.

Smoking and diabetes are a dangerous mix. Smoking raises your risk for many diabetes problems. If you quit smoking,

- you will lower your risk for heart attack, stroke, nerve disease, kidney disease, and amputation
- your **cholesterol** and blood pressure levels might improve
- your blood **circulation** will improve

If you smoke, stop smoking. Ask for help so that you don't have to do it alone. You can start by calling 1-800-QUITNOW or 1-800-784-8669.



How can I keep my feet healthy?

You can keep your feet healthy by taking these steps:

- If you smoke, get help to quit.
- See your doctor at least once a year for a foot exam, or more often if you have foot problems. Have your doctor check the sense of feeling in your feet and how well blood is flowing to your feet.
- Keep your blood glucose numbers as close to your target as possible. Your doctor will work with you to set your target blood glucose numbers and teach you what to do if your numbers are too high or too low.
- Check your feet every day for cuts, sores, blisters, redness, calluses, infected toenails, or other problems. You may have serious foot problems, even though you feel no pain. Checking every day is even more important if you have nerve damage or poor blood flow. If you have trouble bending over to see your feet, use a mirror to help.



Check your feet every day.

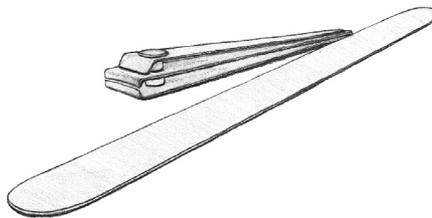
You also can ask a family member or friend to help you. Call or see your doctor right away if you have any foot problems.

- Wash your feet every day in warm, not hot, water. Test the temperature with your elbow or with a thermometer—90 to 95 degrees is safe. Do not soak your feet because your skin could dry out. Dry your feet well. Be sure to dry between your toes. Use talcum powder or cornstarch to keep the skin between your toes dry.
- Keep your skin soft and smooth. Rub a thin layer of lotion, cream, or petroleum jelly on the tops and bottoms of your feet after you wash and dry them. Do not put any between your toes because you might get an infection.
- Smooth corns and calluses. Rub gently, only in one direction, to keep from tearing your skin. Do not cut corns and calluses. Don't use razor blades, corn plasters, or liquid corn and callus removers—they can damage your skin.



- Trim your toenails each week or when needed. Have your doctor trim your toenails if
 - you can't see well
 - you can't reach your feet
 - your toenails are thick or yellowed
 - you have an ingrown toenail

If you can see and reach your toenails, trim them with clippers after you wash and dry your feet. Trim toenails straight across and smooth them with an emery board or a nail file. Do not cut into the corners of your toenail.



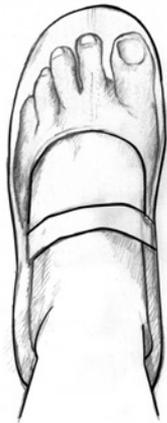
Trim toenails straight across and smooth them with an emery board or a nail file.

- Wear shoes and socks at all times to protect your feet. Do not walk barefoot—not even indoors—because it is easy to step on something and hurt your feet. Always wear socks, stockings, or nylons with your shoes to help prevent blisters and sores. Choose clean, lightly padded socks that fit well. Socks that have no seams are best. Do not wear socks or knee-high stockings that are too tight below your knee. Check the inside of your shoes before you put them on to be sure they don't have any sharp edges or objects in them and the lining is smooth.

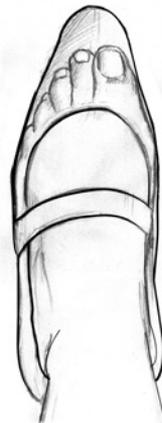


Check the inside of your shoes before you put them on.

- Wear shoes that fit well. Shoes that fit well can help prevent serious foot problems. Shop for shoes at the end of the day because your feet are slightly bigger then—feet tend to swell during the day. When buying shoes, make sure they feel good from the start and have room for your toes. Don't buy shoes with pointed toes or high heels. They put too much pressure on your toes. Avoid open-toed shoes or sandals. Athletic or walking shoes are good for daily wear. They support your feet and allow air to move around inside the shoe. Never wear vinyl or plastic shoes because they don't stretch or allow air to move around inside the shoe. Break in shoes slowly. Wear them 1 to 2 hours each day for the first few weeks.



Inside view of a properly fitted shoe



Inside view of a poorly fitted shoe

- Protect your feet from heat and cold. Wear shoes on hot pavement or at the beach. Put sunscreen on the tops of your feet to prevent sunburn. Keep your feet away from radiators and open fires. Do not put hot water bottles or heating pads on your feet. Wear socks at night if your feet get cold. In winter, wear lined boots to keep your feet warm. Check your feet often in cold weather to prevent frostbite.



Wear shoes on hot pavement or at the beach.

- Keep the blood flowing to your feet. Put your feet up when you are sitting. Wiggle your toes for 5 minutes two or three times a day. Move your ankles up and down and in and out to improve blood flow in your feet and legs. Do not cross your legs for long periods of time.
- Choose physical activities that are easy on your feet. Walking briskly, dancing, swimming, and bicycling are good forms of physical activity that are easy on your feet. Avoid activities that are hard on your feet, such as running and jumping. Wear athletic shoes that fit well and provide good support.



Walking briskly is good physical activity that is easy on your feet.

Pronunciation Guide

amputation (AM-pyoo-TAY-shuhn)

Charcot's (SHAHR-kohz)

cholesterol (koh-LESS-tur-ol)

circulation (SUR-kyoo-LAY-shuhn)

deformities (duh-FOR-mih-teez)

gangrene (GANG-green)

glucose (GLOO-kohss)

nitrogen (NY-troh-jen)

orthotic (or-THOT-ik)

peripheral artery disease (puh-RIF-ur-uhl)
(AR-tur-ee) (dih-ZEEZ)

podiatrist (poh-DY-uh-trist)

pumice (PUHM-iss)

For More Information

To find diabetes educators (nurses, dietitians, pharmacists, and other health care providers), contact

American Association of Diabetes Educators

200 West Madison Street, Suite 800

Chicago, IL 60606

Phone: 1-800-338-3633

Internet: www.diabeteseducator.org

To find dietitians, contact

Academy of Nutrition and Dietetics

120 South Riverside Plaza, Suite 2000

Chicago, IL 60606-6995

Internet: www.eatright.org

Click on “Find a Registered Dietitian.”

To learn more about foot problems from diabetes, contact

**National Institute of Arthritis and
Musculoskeletal and Skin Diseases**

Information Clearinghouse

National Institutes of Health

1 AMS Circle

Bethesda, MD 20892-3675

Phone: 1-877-22-NIAMS (1-877-226-4267)

or 301-495-4484

TTY: 301-565-2966

Fax: 301-718-6366

Email: NIAMSinfo@mail.nih.gov

Internet: www.niams.nih.gov

To get more information about taking care of diabetes, contact

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Bethesda, MD 20892-3560

Phone: 1-800-860-8747

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1701 North Beauregard Street

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Email: askADA@diabetes.org

Internet: www.diabetes.org

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Email: info@jdrf.org

Internet: www.jdrf.org

More in the Series

The Prevent Diabetes Problems Series includes seven booklets that can help you learn more about how to prevent diabetes problems:

- *Prevent diabetes problems: Keep your diabetes under control*
- *Prevent diabetes problems: Keep your eyes healthy*
- *Prevent diabetes problems: Keep your feet healthy*
- *Prevent diabetes problems: Keep your heart and blood vessels healthy*
- *Prevent diabetes problems: Keep your kidneys healthy*
- *Prevent diabetes problems: Keep your mouth healthy*
- *Prevent diabetes problems: Keep your nervous system healthy*



For free single copies of these booklets, write, call, fax, or email the

National Diabetes Information Clearinghouse
1 Information Way
Bethesda, MD 20892-3560
Phone: 1-800-860-8747
TTY: 1-866-569-1162
Fax: 703-738-4929
Email: ndic@info.niddk.nih.gov

These booklets are also available at
www.diabetes.niddk.nih.gov.

Acknowledgments

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. The National Diabetes Information Clearinghouse (NDIC) thanks David G. Armstrong, D.P.M., M.D., Ph.D., professor of surgery and director, Southern Arizona Limb Salvage Alliance (SALSA), University of Arizona, for reviewing the updated version of this publication.

The NDIC also thanks the following people who helped review or field-test the original version of this publication:

For the American Association of Diabetes Educators

Lynn Grieger, R.D., C.D.E.
Arlington, VT
Celia Levesque, R.N., C.D.E.
Montgomery, AL
Teresa McMahon,
Pharm.D., C.D.E.
Seattle, WA
Barbara Schreiner, R.N.,
M.N., C.D.E.
Galveston, TX

For the American Diabetes Association

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Seattle, WA
Kathleen Mahoney, M.S.N.,
R.N., C.D.E.
Drexel Hill, PA
Randi Kington, M.S., R.N.,
C.S., C.D.E.
Hartford, CT

For the Centers for Medicare & Medicaid Services

Baltimore, MD
Jan Drass, R.N., C.D.E.

For the Diabetes Research Centers

Albert Einstein School
of Medicine
Norwalk Hospital
Norwalk, CT
Jill Ely, R.N., C.D.E.
Sam Engel, M.D.
Pam Howard, A.P.R.N.,
C.D.E.

Indiana University School
of Medicine
Indianapolis, IN
Madelyn Wheeler, M.S.,
R.D., F.A.D.A., C.D.E.

VA/JDF Diabetes Research
Center
Vanderbilt School of
Medicine
Nashville, TN
Ok Chon Allison, M.S.N.,
R.N.C.S., A.N.P., C.D.E.
Barbara Backer, B.S.
James W. Pichert, Ph.D.
Alvin Powers, M.D.
Melissa E. Schweikhart
Michael B. Smith
Kathleen Wolffe, R.N.

For the Grady Health System Diabetes Clinic

Atlanta, GA
Ernestine Baker, R.N.,
F.N.P., C.D.E.
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Margaret Fowke, R.D., L.D.
Kay Mann, R.N., C.D.E.

For the Indian Health Service

Albuquerque, NM
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Red Lake, MN
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B.S.N., R.N., C.D.E.

For the Medlantic Research Center

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www.yourdiabetesinfo.org

The National Diabetes Education Program is a federally funded program sponsored by the U.S. Department of Health and Human Services' National Institutes of Health and the Centers for Disease Control and Prevention and includes over 200 partners at the federal, state, and local levels, working together to reduce the morbidity and mortality associated with diabetes.

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The National Diabetes Information Clearinghouse (NDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1978, the Clearinghouse provides information about diabetes to people with diabetes and to their families, health care professionals, and the public. The NDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about diabetes.

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This publication is available at www.diabetes.niddk.nih.gov.

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-800-463-6332) or visit www.fda.gov. Consult your health care provider for more information.



National Institute of
Diabetes and Digestive
and Kidney Diseases

NIH Publication No. 14-4282
February 2014

 The NIDDK prints on recycled paper with bio-based ink.